

JAN/89

ZX-Appeal

Vancouver Sinclair Users Group

next meeting:

KILLARNY COMMUNITY CENTRE
6260 KILLARNY STREET
VANCOUVER

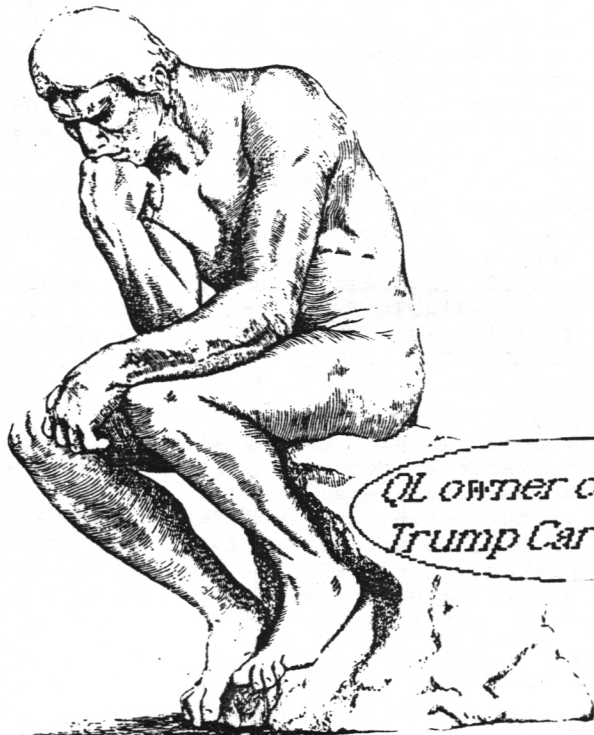
FRIDAY; 7:00PM

JANUARY 13/89



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ZXAppeal is a monthly newsletter put out by the Vancouver Sinclair Users Group. For more information on the group and ZXAppeal see the backcover.



*QL owner considering
Trump Card purchase*

G'day. Yes, thank you, I had a great time - if four weeks of white sand, warm water, palm trees, and a little (a lot!) of the Amber Nectur can be called a great time. Back to the land of moss and mildew. People in Oz were amazed when I told them that in the winter we go to work with our headlites on, drive home with them on and stay indoors for six months. They thought it a pretty crummy way to live and I have to say I'm starting to agree with them. While we're indoors, let's get to some good ol' computin'.

This month we'll try and make up for the fairly sparse issues of late. We have Wilf in with a very readable item about MC pointers; Wilf also has brought in an interesting and stimulating item about enhancing the video display routine on a 1000. Both these items will be Part one this month and Part two next issue. Ken stops by with a rewrite and update of an article he did some years back about protecting your equipment from high-voltage transients - no, not the kind that hang around Bus depots waiting for your daughter. Out-of-town'er Dave came through with a members profile - many thanks Dave! That only leaves the rest of you - and you know who you are! We reprint an article that is very much in the news lately - VIRUSES. This time from a Canajan viewpoint. Fred is back with an article about...well, I'll let Fred explain. We also reprint a review of a Desk Top Publishing program for a Spectrum-emulated 2068. The review was created using this program and is taken from the "Spectacle", the newsletter of the West Aust ZX Users Assoc. You'll see how superior this program is to anything presently available. Hopefully, when we become more proficient at using the program, we'll be able to use it to create much of the newsletter. The Club bought the program and it will shortly be in the 2068 library if anyone wants to take a closer look. The word processor part alone is better than anything presently available for the 2068, and I'm including Mscript in that comparison.

...Ray Youngberg, of Dayton, Ohio, has written offering for sale his very extensive hardware, software, and publication collection of things Sinclair and Timex. The list is too long to print here so if anyone is interested in looking at the list, let me know at the meeting.

...another X-member, Rudy, is also offering for sale his very extensive hardware and software collection of goodies for the 2068. See list printed elsewhere.

...the Z88 seems to be gathering interest. A couple of the mainstream mags have recently printed quite favourable reviews and a Users Group is starting up in California. It's been heard that VSUG-member Tim Woods, publisher of Time Designs, will be coming out with a magazine for the Z88. Prices for the little black beastie did dip last Fall but are now poised for an INCREASE. Faltering machines don't increase their prices.

...first we heard that Knighted Computers had pulled the pin. Then we heard that they were still supporting TS machines but only the 2068 and from a new address. Now we hear from a club member who spoke to someone from Knighted on the phone confirming that Knighted Computers was definitely out of the TS marketplace. We also hear that Curry Computer will no longer be bringing in any Spectrum items from Britain. Anyone left out there?

...1200 baud modem boards by Hayes are available from Lynn Johnson, 3490 The Alameda, Santa Clara, Ca 95050, at \$19.95US each or 15 for \$225US. If ordering by credit card call 408-984-6300. These babies just need a power supply and TTL/RS232 level converters to work. Perfect for you hardware hackers.

...the club has received a copy of QL DOC, a newsletter for the QL from Quebec...but it's in French. Looks pretty good. Anyone want to take a look, let me know.

...Frank Toemay, of Quantum Computing, was the most enthusiastic supporter of the QL I've come across. His business's sales brochure was also the most impressive. So I guess it is only fitting that when his business failed it did so with the loudest crash. Frank declared bankruptcy to get out from under, listing his assets as one cent and his liabilities as over \$60,000US. The Milwaukee group paid for three QLs they never received and they were only a small portion of a large number of people left holding the bag.

RENEWING MEMBERS:

Pat Igglesden, Ian Robertson
 Gale Winterburn, Rusty Townsend
 Chung Chow, Vince Lee
 Wilf Rigter, Joan Kealy
 Kim Hunkins, Don Walterman

NEW MEMBERS:

Mel Richardson, Windsor, Ont.
 Warren Tucker, Vallejo, Calif.
 Rene Bruneau, Toronto, Ont.
 Warren Jackson, Roscoe, Ill.
 Real Gagnon, Montreal, Que.

*** DOWN UNDER REPORT ***

Sinclair computing is still going strong in Western Australia - if a little diminished since I was there two and a half years ago. The W.A. Users Group has about 50 members and is holding steady. All software and hardware must be obtained by mail-order from Britain. The Amstrad is the big kid on the block with many models available in many stores. The Z88 is just starting to come in. I had the pleasure of meeting Garth Gregson the last time I was in Perth when Garth had been mentioned to me as the Prez of the W.A. group. I

again looked Garth up, finding that he is now the WAZX Assoc treasurer. I went along with Garth while he was picking up a Z88 and a whole bunch of related goodies from a computer shop for an absolute bargain - \$600 for the lot. A super deal! Garth was looking forward to another enjoyable learning curve. I also met Gary Nahnkoph the current Prez and Newsletter editor. The QL seems to have gone it's own way with a separate Users Group set up for QL users. I wasn't able to get in touch with anyone from this group.

...meeting date!

JAN/89						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	*	*	*	*

Be there
 or be square!!

Friday the 13th!!!

Nov Minutes

=====

-by ur humble scribe

The meeting was opened at 19:25 by Gerd who informed us he was wearing five hats this evening; ie. Pres, Vice Pres, Treasurer, Editor & Book Librarian. There were 14 people present.

The first item of business was the fact that we need "a volunteer to do the next newsletter", as Rod is standing upside down again (in Aussie-land). The silence was deafening & Gerd got stuck with it, by default.

Gerd the Treasurer tells us we have about 1K in ye olde credit union.

Gerd the VP, says Glenn the VP says Greetings, but I can't come tonight. The modems are not quite ready. [Since then I have seen a BBS message from Glenn that the modems are now available.]

Gerd the Editor says We need more articles!

Gerd the Book Librarian says Kevin is long gone, out where it snows all winter instead of raining. Gerd tells us he edited the library down, threw out some stuff. This brought out the ire of some accomplished cheapness afficianados. We need a book librarian. Wilf suggested that considering the age of some of the written material, that the job title be changed to historian.

Gerd is going to inventory the library contents & put it in the newsletter. If any out of towners would like to borrow any of this material, write Gerd.

Bill Rutter the 2068 librarian says nothing much is new.

Jim Horne the 1000 librarian says the library is getting lots of use, about 40 titles a month going out.

The hardware group met at Ian's the first week of November. The project was printer interfaces; putting memotext into the NVM. Wilf has built a printer interface (for the wife) using the Zilog PIO. The next meeting at Harry's will feature the Battle of the Interfaces.

Ken Grant demoed some British educational software - Micro Primer from the MicroElectronics Education Programme. Thison a Spectrum.

Wilf passed around a 64K credit card sized [& thickness] memory card which he brought from work. It was an HI OKI 9526 IC Card.

Harvey had brought some Usenet and BBS info on the virus which made the big splash earlier that week. He also had the Peitgen & Richter book, The Beauty of Fractals which he showed. A long and involved conversation about viruses got fairly weird about here.

Ken Abramson showed a pamphlet on a pet identification system called InfoPet, which puts an encoded pellet beneath the skin of a pet. This code can then be read with a suitable scanner & the lost pet returned to its rightful owners. Fantasies of Big Brother began to be expressed.

Harvey mentioned that some long term care institutions are using a similar warning/ID system with confused residents, although with bracelets rather than under the skin.

At this point, the conversation turned to aircraft simulators. Gail Winterburn, who usually is very quiet, became quite animated telling us about a 767 autopilot he had seen in Montreal. This autopilot had approximately 150 processors; there were 3 main systems which were fault tolerant. He also had seen an F18 simulator over at Courtenay.

Rod H sent a message that there was a QL on sale cheap in the current Buy & Sell. This gave rise to a protracted discussion on the merits of various systems as dedicated wordprocessing systems. The Apple II versus the QL was the primary comparison. WYSIWYG in the Psion program Quill was explained.

There was here a discussion of the Radio Shack speech recognition chip. Ken Grant says he will demonstrate the Kara speech chip at some meeting, or rather his son will, if we can get the smokers to butt out. He is allergic to tobacco smoke.

Ken Abramson then told us of rescuing a a TS1500 which had a burnt out power transistor. The Timex number is ZTX 750, which Ken replaced with a generic MPS V51.

The meeting dissolved into general mayhem & merriment.

When Harvey finally arrived, Gerd was holding down the fort by telling the group about the M-1109 printer he bought from a local chain for \$110.

Gerd formally opened the meeting at 19:35 with 15 valiant souls present. Gerd started by relating that his order from Zebra had arrived. He'd been starting to wonder whether they were still in business. Gerd then passed around the Nov. minutes he received - too late to include in the newsletter. Harvey noted that his (Harvey's) "put-it-off'er" was working very well indeed, to which Glenn Read replied that he needed a "round-tu-it". (Anybody want a job?)

Glenn Read says the 1200 baud modems are now available. After all the questions and waiting, it did not seem that too many people were willing to open their wallets. He is looking at bypassing the RS232 stuff. Glenn then mentioned he'd been studying the Sinclair Rampak circuit and noted they use the +9V line to generate the needed -5V and +12V levels. Which is why the RamPak will not work with the PC8300. Then ensued a lot of discussion about the good old days of 4116's, etc.

As Gerd was still wearing 5 hats [Rod H. is still "down-under"], he told us he didn't know exactly how much money we had but it was about 1K. As Temp Editor he wished for many more articles. Writers...please!

Harry Slot reported for the hardware SIG. They'd met the previous Sunday and would be meeting again at Harry's in a couple of weeks. The last meeting was spent primarily tracking down a cold solder joint on Ian McLean's printer interface. Apparently this took several hours & was as maddening as hardware debugging can be.

Bill Rutter, for the 2068 library, says he has nothing much new. Jim Home, for the 1000 library, was not present but Gerd brought several requested tapes. Gerd, as the Book Librarian, reported that he was still making up the book list.

Bob Denison reported the Robot group recently held its Annual General meeting. The contact person is Al Wright, an early ZX81 aficionado and Original Member.

Ken Abramson stood to tell us he had actually been using the much-vaunted TeleComm of which we have been speaking of late. He's been using the MTS system via Simon Fraser University to brainstorm with a chap in Dawson Creek. Glenn Read related a tale of an unfortunate MTS outpost security lapse. Ken also

reported that the new copyright law was making itself felt in the school system. He passed around a software licensing agreement form from Didatech. [Now do you want to do away with intellectual property?]

There was some discussion of the number of libraries which have catalogues on-line. There were mentioned three locally: SFU, Richmond Public & Surrey Public. From here the conversation drifted to where to get good deals on paper. The preferred sources being Costco & the Canadian Warehouse Club. It seems they even have 8" thermal paper. Gerd did some tests on Radio Shack-type thermal paper and Fax-type thermal paper. He found the R/S stuff fades over time. It turned out that Glenn's business had been involved in fairly extensive tests of different sorts of thermal paper. [There may be an article there, Glenn, wink, wink, nudge, nudge.] He has run into people ironing their (CBO) tickets & having them turn all black. Even stranger, there is a factor of humidity involved. Some paper, while working in Vancouver, fails in Toronto. Ken Abramson reported that "white-out" correction paint makes 2040 paper turn black! Harry Slot reports that cat urine erases the standard Radio Shack type 2040 printer paper! (How did he come to find this out!?...ed) Further, Harry reported that the paper was reusable! (Would you want too? Hey Harry, wet or dry?...ed) On that pungent note the topic was dropped.

Ken Grant rescued us from a cat fight by telling us about an excellent article in PC-Computer Magazine on how Stephen Hawking, the British physicist, communicates via a speech board.

Harvey then showed a series of Fractal and Mandelbrot slides he bought from the Amygdala newsletter.

After the light show there was general discussion of the technique and difficulties involved in the Mandelbrot generation process. When the aptness of parallel processing [viz. Ciarcia's Mandelbrot Engine in Oct/Nov/88 Byte] was mentioned, Louis Montminy stated he wanted to multiprocess with TS1000's!

Glenn Read told the group of the Hacker's Dictionary he found. In particular it contained a reference to the mythical "computron". This is a particle of computing ability which is frequently close to absent at multi-computer installations. There was also talk of a Stanford university keyboard which had, in addition to the regular ALT, CONTROL and SHIFT keys, also HYPER, META, BUCKY-BITS and four varieties of Shift keys.

Ken Abramson told a dynamite joke which I don't remember & mayhem ensued. A splendid time was had by all.

Membership Profile

I am a school teacher, Grade 7/8 level, in the Math, Science and Geography areas. I presently use a TS 2068, Spectrumized with a Rainbow emulator and edge-connector, to which I have piggy-backed a AGF joystick interface and a LPRINT III centronics printer interface. The later drives a Panasonic KX-P1080 printer. I use a black on green Apple III monitor for visual feedback. My program collection leans heavily towards simulations (FIGHTER PILOT, CHECKERED FLAG, HUNTER-KILLER, FORMULA ONE, NIGEL MANSELL'S GRAND PRIX, etc.) "work" programs (TASWORD II, OMNICALC, ARTIST, ARTWORX, MASTERFILE, etc.), and a large collection of arcade games. Many of the latter were provided by my cousin, who lives in England and has two Spectrums. He also has provided the add-ons previously mentioned. My happiest day was Christmas 1986, when I found out I could get a Spectrum emulator (the OMNI-EMU). Before that, I despaired of using any of the software my kind relative sent me. I still use cassette storage with a GE tape-recorder, which I got from E. Arthur Brown.

The OMNI-EMU now resides in the storage carton, with the TS 1000, the TS 2040, and the various power supplies. I use my machine to make tests, exams, assignments and drawings for school, and to facilitate my hobby of sports (read baseball and hockey) statistics. OMNICALC is especially useful in this area. I am afraid I don't really understand the workings of the machine, but I have taught myself enough Basic that I can write a program to solve any problem I run into at school. I use TIMEMACHINE to speed these up occasionally, but usually I don't worry about having to wait.

I also have a fairly large collection of English magazines (ZX Computing and Sinclair User), from 1986-1988, but I stopped getting them when they ceased publication or got ridiculous. My cousin also supplied about a full file-drawer worth of clippings from other Sinclair mags which he collected for me. Finding anything in this vast clippings file is most difficult in spite of the fact that I categorized it.

In the near future I plan to buy a TS 2068 as a backup to "Old Reliable", which I might add, has worked without a hitch for over three years. This cannot be said of any of the C64s, of which we have 18 at my school. Everyone of them has had to be repaired at least once in the last two years (I know, as I am in charge of them). I would be pleased to communicate with any other member of VSUG about matters TS, although I must admit complete ignorance of "pull-up resistors" and such.

Dave Noordhoff

Chatham Ontario

The Problem:

It was a dark and stormy summer night. Mr. and Mrs. S. looked out of their livingroom window into a dazzling display of lightning accompanied by tumultuous claps of thunder-- very unusual for Vancouver. All of a sudden, the lights flickered and then extinguished. One-half hour later when the lights came back on, Mr. S. decided to watch a video movie. He was quite alarmed when neither the TV nor the VCR would work. A quick check of the breakers revealed nothing and other electrical equipment would work when plugged into the same outlet.

Five days and \$140 later Mr. S. tried to recoup part of the TV and VCR repair costs from the insurance company and from B.C. Hydro. "Had your equipment caught fire, you might have had a claim, but otherwise you are not covered for acts of God," came one reply.

The next reply, however, was more enlightening. "What your equipment experienced was a high voltage spike or transient probably caused by lightning striking a power line or a Hydro distribution centre. Although these transients usually last for less than a millisecond, their high voltages and currents may contain instantaneous energy equivalents of up to a few Joules. In other words, this short duration, high energy voltage spike will find its way into the closest solid state devices and burn them out. Low voltage computer logic chips are especially vulnerable."

But this scenario does not occur only during lightning storms! It can even happen on a sunny day in August and can originate in your very own home!

Recalling your high school physics, a coil of wire wrapped around an iron core produces a magnetic field when an electric current flows through the coil. The iron core quickly becomes magnetized. But if the electric current is suddenly switched off, the magnetic energy in the iron core suddenly collapses and, depending on the nature of the coil (e.g. its number of turns), may induce in it a voltage of up to a few thousand volts! In your home, any large electric motor or transformer may cause potentially damaging high voltage spikes to appear on the power line when switched on and off. Examples of such motorized appliances are: washing machines, refrigerators and freezers, furnace motors, vacuum cleaners, electric drills, air conditioners, table saws, kitchen blenders, etc.

The Solution: Suppressing your transients:

In the past, some ingenious, but somewhat limited methods for voltage spike protection have been used. The difficulties in transient suppression are inherent in the nature of transient voltages. Having generally undefined durations and frequencies, many transients cannot be eliminated by electromagnetic interference filters. Back-to-back zener diodes across a line worked, but were expensive, limited in their power dissipations, and limited in their availability.

Enter the 'MOV' (Metal Oxide Varistor). Available in many energy and voltage ratings, when this inexpensive component is placed across a power-line circuit, it acts as an open circuit (i.e.- it does nothing) under normal circumstances. If, however, a high voltage spike appears on the line, the varistor quickly acts like a short circuit and thus absorbs the spike until the voltage drops below the designed clamping voltage characteristics. How quickly will these varistors act? The General Electric MOV-II series response time is stated to be less than 50 ns (a nanosecond is one billionth of a second)!

There are two ways of utilizing this varistor technology. One way is to buy GE or RCA voltage spike protectors already on the market for \$12 (see 'Spike Protector', Popular Science, July, 1983). This is a small device that you plug into a wall outlet and then plug your VCR, computer or a multiple outlet bar into the device. This spike protector is a sealed plug/outlet unit containing a varistor and offering a relatively good degree of protection, clamping transients to a maximum of approximately 435 volts.

The alternative to buying your spike suppressor ready-made is to customize your own. Anybody who can connect two wires to a household plug can easily make a simple transient suppressor. Considering that an actual varistor costs less than \$2.00, and that all you have to do is to connect it across the line to be protected, you can have several home-made suppressors for the cost of a commercially made one. In customizing your own, you can also match the varistor clamping voltages much more closely to the overvoltage tolerances of your own equipment. For computer equipment you might choose varistors with lower nominal clamp voltages than those found in the commercial spike protectors. Also, you can select varistors that can be built right into the power supply of the computer or of the equipment to be protected. You can thus effectively double-up on your protection.

Construction: Models 1 & 2, Cheap & Dirty:

Model 1 consists of a small disc-shaped varistor V180ZA1 or V130LA2, having a diameter of 8mm, wired across the terminals of a small rubber line-plug. This is then plugged into the same outlet as the transient-producing appliance (washer, refrigerator, etc.). Cost: varistor \$1.77 plus 75¢ for the plug.

Model 2 uses a larger varistor V180ZA10 (or V130LA10A), having a diameter of 16mm, installed in a correspondingly larger line-plug (2-prong). Cost: varistor \$1.87 plus plug \$1.35. This will protect against pretty-well any high voltage spikes you are likely to have on your line, other than, say, a direct lightning strike. A few of these devices plugged into your household outlets should afford excellent voltage spike protection.

...cont'd on pg 13.

This simple little program increases the Baud rate at which the ZX81 saves and loads to 1500. This means that the already awkward save/load system becomes even more critical, however I have found that provided you keep your cassette in good operating condition, clean and with the heads regularly adjusted, then no real problems should be experienced.

You must make absolutely certain that the characters in Line 10 are exactly the same, and the Line 1 REM must contain 244 characters. It might be wise to save a copy of this program BEFORE running it!

Having RUN the program, delete one line at a time, lines 10 to 90 and type in — making sure Line 1 REM is still there — program 2. Prepare a cassette and RUN the program, it will save itself on tape and then set itself up ready for use. Before saving or loading any program load this in first, a program must be saved at this speed before you can reload it at the higher Baud rate.

Use RAND USR 32512 to save a program and RAND USR 32525 to subsequently reload a program.

ZX81 Fast Load

Ian Deaville lives in the fast lane in Rotherham and explains to the other ZX81ers how to join him.

PROGRAM 1

```
1 REM .....244 CHARS.....  
.....ETC, ETC .....
```

**10 LET A*="CD230F11067FCD2B7FCD2
B0F211D7F221640CD707FCD2B0FC90B0
B0B00000000000000CDA80338F9EB11CB1
2CD460F302E10FE1B7AB320F4CD4E7FC
B7E2328F8210940CD4E7FCDFC0118F85
E37CB13C89FE602C6014FD3FF062310F
ECD460F3072061E10FE0D20EEC3D87F1
8E0CDA803CB12CB0ACD7C7F18FB0E010
6003E7FD0BFED3FF1F30491717382810F
1F1BAD2E503626BCD7C7FCB7A792003C
B7B7B38F510F5D12004FE5630B23FCB1
130ADC97AA728BBCF0CA7065010FEC36
E7F21824011007F01E000EDB021FF7E2
20440C3C303"
15 LET X=16314**

```
20 FAST  
30 IF A*="" THEN GOTO 80  
40 POKE X,16*CODE A*+CODE A*(2)-  
476  
50 LET A*=A*(3 TO )  
60 LEY X=X+1  
70 GOTO 30  
80 SLOW  
90 STOP
```

PROGRAM 2

```
10 SAVE "SUPERLOAD"  
20 PRINT "TO SAVE USE RAND USR 3  
2512"  
30 PRINT "TO LOAD USE RAND USR 3  
2525"  
40 PAUSE 150  
50 RAND USR 16738
```

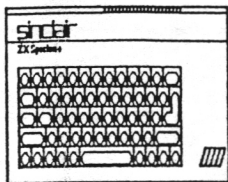


Sanyo claims its new MBC-16LT laptop is the world's smallest and lightest.

...somebody want to tell these guys about the Z88.

Spectrum News

Spectrum Desk-Top Publishing!



This page was produced on an ordinary 48k Spectrum and an Epson compatible printer with Word-Master, Headliner and Typeliner!

Twelve fonts are supplied in various styles and sizes, with a font editor for creating your own styles.

Graphics

You can load graphics created with a separate art program or design them with Headliner. 'Snapshot' screens can also be loaded.

Graphics can be stretched vertically and horizontally and printed with shading. Text can be wrapped around a graphic by moving text-boxes to follow its contours. Graphics can be positioned anywhere on the page and even overlapped. Up to twelve can be used on a single page.

Compatibility

Word-Master, Headliner & Typeliner are available in versions compatible with the 48k, 128k, 128k+2 and Spectrum+3. The +3 version runs in 128k mode and allows full use of the RAM-disk and built-in printer ports.

The programs can be used with cassette or disk. Compatible disk interfaces include the DISCIPLE, Plus D, OPUS Discovery, Swift-Disk and TR-BETA. A special version is also available for Sinclair Microdrives.

If you already have a word-processor, text files from this can be converted for use within Word-Master and Typeliner.

Printers

You will need a 9-pin Epson compatible printer dot-matrix printer to use Word-Master and Typeliner.

Compatible printers include the Star LC-10, Citizen 120-D, Brother M1009 and M1109, Amstrad DMP series printers, the Epson FX and LX series, Panasonic KXP-1061, Centronics GLP and many, many more.

Special versions of Typeliner are available for MT-80 and Shinwa CP-80 printers. There's also a version for the Brother HR-5, though the print quality from this is poorer than from the NLQ printers.

Reprinted from the 'Spectacle', the newsletter of the Western Australia ZX Users Assoc.

Cardex Software have produced a suite of programs designed to bring desk-top publishing to the humble 48k Spectrum.

Word-Master is the word processor at the centre of the system, with fast text editing, graphics and multiple file handling facilities, this program is very useful itself for normal word processing.

Headliner is a graphic design program that loads into Word-Master and can be used simultaneously. Six giant fonts are supplied for creating headlines and titles - see the examples on this page.

Typeliner adds full page layout facilities and a variety of fonts, allowing complex, high quality printing to be produced.

Typeliner

Typeliner is an extension to the Word-Master word-processor, so you'll need both programs to start desk-top publishing. Unlike a word processor, Typeliner allows you to create and view a complex page layout on the computer screen before printing. The layout can include multi-column text and graphics.

Applications for Typeliner include forms & stationery, business & personal letterheads, price lists, notices - any form of printed material requiring high quality output.

Page Layout

Designing a layout is approached graphically. Up to 24 text-blocks are placed on the page and the text 'poured' into them, producing a print preview. Text and graphics can all be seen in the preview.

The preview page represents an area 10.6 inches deep by 8 inches wide -

slightly smaller than a sheet of A4 paper. You can zoom in on the page to see the fine detail.

All of Typeliner's facilities are accessed by single key-strokes and the effect seen immediately in the display; the cursor keys, for example, make a text-block larger or smaller. There's no need to type in x & y positions.

Printing

The finished layout can be printed in DRAFT or NLQ modes. The draft option uses the printer's 60 dots/inch



graphic mode and is useful for checking the fine detail of the layout. The NLQ option uses the 120 dots/inch mode and double or triple-strokes each line printed, producing a very dark image.

Fonts

Typeliner does not use the normal printer styles like elite and pica. Special fonts have to be loaded into Word-Master with Typeliner, and these are used to print the text. Up to seven fonts can be used on a single page.

Because the text is software generated, features like proportional spacing and double height printing can be achieved, even if your printer doesn't normally support these.

Computer viruses: Could it happen in Canada?

by Nancy Putterman
Computing Canada

At the beginning of November, the U.S. watched for two long days as the largest assault ever on a computer system network brought thousands of systems to a standstill.

The attack, a computer virus infection that spread across the U.S. with alarming speed, was according to much of the U.S. media, unintentional. But the virus program computer student Robert Morris at Cornell University in Ithica, N.Y. devised had much of America on edge as it attacked and paralyzed about 6,000 of the country's computers. It made hundreds of copies in each machine it entered. It even penetrated U.S. military data, although it didn't breach the security of any vital military information.

It is downright creepy to imagine a computer virus. Like its human analog, it emerges from the dark depths of a system and reproduces itself, creating offspring which further multiply. In the latest U.S. case, the virus gained entry through the open "back door" — often called trap door — of a computer system's program software. It went rampant from there.

As obvious as computer viruses are to the programmer whose machine is virtually immobilized, most people don't understand them. A virus, says

David Gamey of the Coopers & Lybrand Consulting Group in Toronto, is a program that infects other programs by modifying them to include a copy of itself. Viruses are usually introduced by a "trojan horse", a program that in addition to its normal function has been deliberately programmed to have undesired effects. The infected programs are turned into trojan horses to spread the virus even further.

Viruses and trojan horses can be used to introduce "logic bombs" into systems. Logic bombs are programs that have been set up to do something damaging under certain conditions, such as erasing or scrambling data. There is also a possibility of getting copycat viruses where someone can modify an existing harmless virus to be malicious.

How viruses work is this: The virus, explains Gamey, copies itself into the boot-strap area, a section of a disk which is run automatically at start-up time, enabling the virus to gain control whenever that disk is used to start the system. It may also take control of specific operating system functions and services, or it might modify an existing program on the system to include a copy of itself.

By exploiting these functions, he adds, a virus could get control before the proper operating system software gets control. And it can have access to data and programs in the system until the system is actually turned off.

Of course, there are ways computers can be protected against viruses, including, naturally, "vaccinations" — security software designed to prevent viruses from infecting computer systems. The latest incident in the U.S., however, proves that viruses can get out of control. And now many Canadians are likely wondering if the same thing could happen here.

According to David Griffiths, a partner at Coopers & Lybrand Computer Security and Contingency Planning Practice, Canada's computer networks are different than American networks. In the U.S., he explains, a large variety of inter-disciplines — such as the military, academia, science, and vendors — may all be users on the same network. In Canada, however, many disciplines such as education or military are tied into their own networks. So while viruses are possible in any network says Griffiths, the potential of a computer virus affecting the same multitude of computers in Canada as it did in the U.S. is "unlikely" to happen.

Canada's networks less susceptible to viruses

USER GROUPS

Amiga User Group (PaNorAmA), BCIT, Rm 129A General Meets 2nd Wed 7:30; Programmers 4th Wed 7:30
Apples BC Computer Society Lorne 467-6062. Oct1-Pacific Coast Computer Fair, McPherson Cent, Bby (flea market & user group displays). Oct. 10 - ABCCS Exec Meet Oct. 26 - regular monthly Oct. MAC meeting.
Apple II User Group Meeting BC Apple Society, Burnaby Rugby Club, Oct 3 regular meeting Kiyo Masuda 437-9935
Apple III SIG Monthly Kiyo Masuda 437-9935
Beaver Valley Commodore Club Meets first Tues every month at Montrose School Library. Call John Vink 367-6426
B.C. Unix User's Group meets 4 times a year. Call George Pajari 925-2555, 2545 Queens Ave, West Van V7V 2Y9.
Clipper Developers Association 1st Mon SFU 873-0747
Commodore Club 1st Tues Sunset Comm Cent 738-3311
North Interest Group Speakers and Tutorials on Forth hard., soft. & applic. Meets 7:30 1st Thurs, BCIT main bldg, 3700 Willingdon Rm. 1A-324
Kaypro User Group Vancouver Portable Computer Club 3rd Monday at Kaypro (CP/M) 278-5776
Mac User Group Meeting BC Apple Society, WCB Building, 6951 Westminster Hwy (Kiyo Masuda) 437-9935.
Mainland Mac Rm 115 Kwantlen College, Surrey, 574-3813, Ron Haidenger. Call for info
Maple Ridge Computer User Group 467-2647 M.R. Sr. Secondary School 7:30 PM. Free
NEC APC Users Group Bi-monthly Lee 980-5825
North Am. Amstrad User's Group. 65-13880 - 74th Ave, Surrey V3W 7E6 597-0881 R. Scott
Novell Netware Users Peter Whitelaw 669-8789 monthly
Port Coq. Computer Club Commodore Amiga & IBM 1st and 3rd Tues 7:30 Poco Rec Cent 2100 Wilson Ave 942-4286
Software B.C. General Meetings, 3rd Thurs of month in Vancouver, #400 - 1190 Melville St., Vancouver, 684-7432.
Tandy 1000+ Club Meets 2nd Mon. 7pm Kwantlen College, Newton Campus, Rm 209 or 211. Len Boscoe 574-5419
Sir-Tandy 1000+ Club
The New Apple Alliance May Chow 435-7609 last Saturday of month in Kitsilano Neighbourhood House.
TI Computer Club Central Richmond. Meets 2nd Wed of each month. Phone Keith at 261-2739
Trace (Richmond Atari Club) Thompson Comm. Centre Linus Lane Richmond, 272-5789 1st & 2nd Monday 7:30-9:30
Vancouver Electronic Publ. Assoc. Box 24776, Van 875-0677 Gen. meet. 1st Mon. 7pm, BC Club, Enterprise Cent, 750 Pacific Blvd S. Commodore & QMS Product Demos
Vancouver Netware User's Group Les Lebrant 275-2829. Meets 1st Mon of the month.
Vancouver PC Users Group Planetarium 734-0060, \$20/year membership. 7:00 pm 2nd Thurs
Van. Sinclair Users Group. Supports all Timex-Sinclair computers. 2nd Fri. Killamey Comm. Cent., Gerde 931-5509
Vantari 34-3046 Coast Meridian, Pt. Coq. Judy Hercus or Don Hatch, Hastings Comm. Ctr 3096 E Hastings, 2nd Wed.
Wang System User Assoc. 736-8841 ext 227 J.P. Doiron
99 Users Group Every Thurs. 7-10 pm, Cameron Rec Cent., Bby. Ron:522-2598. 1st Thurs Games, 2nd Thurs General 3rd Thurs Tutorials 4th Thurs Copying Prog.

WANTED TO SELL

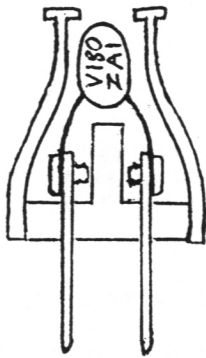
- 3 - TS2068 computers - new, never used.....\$80 each
 - 1 - Spectrum Interface 1 and single microdrive complete with "Twister Board"....\$100
 - 3 - Jutan recorders (white brick).....\$15
 - 1 - TS2040 printer.....\$20
 - 1 - Kempston Joystick I/F for Spectrum edge conctr....\$30
 - 3 - 400 Spectrum programs.
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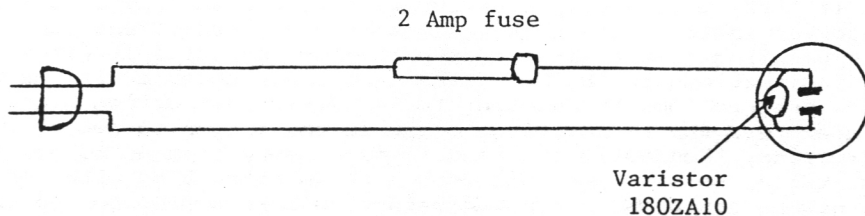


Model 1



Model 2

Model 3: This model uses a fuse in series with a line-socket into which you plug your equipment. The idea of the fuse is to provide a disconnect for your equipment in case of a catastrophic transient such as a lightning strike. The current rating of the fuse must be sufficient to supply all of the equipment plugged into the protected line-outlet. Note: since I have not had, nor do I wish to have the experience of testing it during a direct lightning hit, this circuit is presented untested, with that improbable risk in mind. It is also advisable to tape the fuseholder to protect young children. Suffice it to say that I have been continuously using all three models in my home, with a noticeable decrease in the number of observed TV glitches, and with no indication of heat or any other signs of failure (Heat could be caused only by very large, long duration transients).



Model 3

GE-MOV II varistors and their technical specifications are available from:
 R-A-E Industrial Electronics Ltd., 3455 Gardner Court, Burnaby, B.C.
 V5G4J7, Phone 291-8866. It is advisable to phone regarding in-stock varistor availability.

Model 4: This protector is installed right inside the Timex/Sinclair computer -- right at the 9 volt input jack, or as close to it as possible. The varistor to use is a V18ZA1 (\$1.51). You can install it right across the 22mfd filter capacitor connections.

MC POINTERS
by W.RIGTER

Definition:

An identifier or indicator of the location of data; for example an address, an algorithm for generating an address, a code for generating an address or a destination or source designator.[1] : A useful suggestion or hint.[2]

INTRODUCTION

In this introduction to Z80 programming we focus on small, efficient routines, that provide maximum power in minimum size.

Such programs are small enough to be understood by reading a short functional description and by reading the annotated source code.

A library of short programs and subroutines is used to build complex programs with a modular structure.

This approach has benefit for robotic controllers, and small personal computers because of highly concentrated code coupled with modular structure.

A short review of the Z80 and the tools to write Z80 MC programs is required to establish a common terminology.

Z80 M/L

The most popular CPU chip in the world is you guessed it: the Z80!

It is a cheap, easy to use processor with a powerful instruction set for which alot of software has been written. It has found it's way into numerous products, especially in personal computer and controller applications.

It is software upwardcompatible with older 8080 CPU but has much enhanced registers including a alternate set of main registers and new index registers.

The Z80 can execute 158 (not including the unofficial ones) different types of instructions.

In order to write Z80 software, it is essential to obtain a copy of the Z80

Data Book which contains a complete description and detailed references for the programmer.

What makes it tick? A simple description is the analogy of a human being reading a book of instructions with eyes to read and pencil and paper to write and a finger pointing to the first instruction on the top left corner of page 1. The book of instructions is the ROM, the pencil and notebook is the RAM and the finger is the program counter pointing to the first instruction after reset.

The brain interprets the instruction, advances the finger to read the next part of the instruction, then tells the hand to turn several pages to point to a new instruction. VOILA, we have just executed a JP NN instruction with the finger pointing to new location NN. For human beings this is a slow boring task but for the CPU chip and memory it comes natural and FAST!

I would like to introduce the fundamental levels of computer operation and show how layer by layer the concept of the computer changes until we reach AI and beyond.

Assuming a Z80 personal computer (ie TS1000) and the Z80 Data Book, let's look a bit closer at how we can deal more efficiently with CPU instructions, by using some of the powerful tools of the programming trade.

BINARY CODE

To begin, the most primitive representation of any program are the bytes in RAM or ROM which tell the CPU what to do. These are the instruction codes and data which mean everything to the CPU but very little to all but the most dedicated M/L enthusiast.

These bytes are the product of a multilevel programming environment and, other than the space they occupy, are of little interest to the programmer.

HEX CODE

The next level up, still quite primitive, is the world of M/L instructions and HEX codes assembled by hand. All that is needed is a Z80 Data Handbook and some paper and you can, in theory, write a program which is then translated by hand into HEX or Decimal numbers which in turn are poked into memory.

With a M/L monitor HEX data can be directly entered into memory and utilities such as Block Move, HEX Dump and sometimes Disassembler are provided to view and manipulate data. It still requires hand assembly and although I have written a number of small programs (including a 100 byte Game of Life) with such tools but don't recommend it. It does however build an appreciation of the relations between High Level Language programming and the code that the CPU actually uses. Compact coding habits are acquired of necessity at this level.

ASSEMBLER

The first practical working level is the Assembler programming environment. Symbolic names, used to replace physical values of data and program modules, allow the program to be written from the "Top Down".

The programmer has more conceptual freedom when he can write programs without worrying about the details.

Part II next issue.

THE VARIABLE DISPLAY ROUTINE

by W. RIGTER

INTRODUCTION

A novel interrupt driven ML routine, VDR provides the following enhancements to text screens:

1. 34X28 (952) character display
2. 68X56 (3808) plot display
3. relocatable screen
4. multiple screens
5. adjustable screen height
6. SLOW mode X5 speed increase
7. may be mapped into stringvariable.
8. string functions operate on screen
9. COPY to printer using LPRINT (vs(X)TOY)
10. window on large string array
11. fast SCROLL in BASIC
12. fast animation in BASIC
13. NO M/L code required
14. compatible with normal screen
15. multitasking capability

All this requires less than 60 bytes of machine code (ML) and a few lines of BASIC to implement.

The key to these improvements stem from the replacement of the TIMEX video routine with the Variable Display Routine shown in listing 1.

The term Variable has a triple meaning in the sense that VDR permits direct display of a string variable as well as the variable display size and location of the screen and the variable SLOW mode execution time.

The BASIC lines in listing 2 can be used to glue VDR to existing or new BASIC programs.

Almost every TIMEX program ever written can benefit from some improvements with only minor changes to the original program.

New BASIC or ML programs can fully exploit all the above advantages.

APPLICATIONS

Some application examples that spring to mind are:

1. wordprocessing
2. animated games
3. lowres graphics.
4. spreadsheets
5. floating point calcs
6. realtime control programs

The VDR routine evolved from a need to store multiple plotted graphics files and to move these files to the screen in rapid succession producing an animated picture. In addition a voice synthesizer had to be frequently loaded with phoneme data for vocal accompaniment.

This program really stretched the limits of TS1000 machine language speed.

The solution was to turn tables on the display.

Like the proverbial Mohammed and the Mountain it is much faster to move the screen to the display data than it is to move the data to the screen.

Similarly scrolling characters, lines or the whole screen is achieved by moving the screen location like a sliding window over a large array of display data.

Since the SLOW mode video is interrupt driven, I/O (ie a voice synthesizer or a Real Time Clock) can be read or loaded at precise 16.7 msec intervals.

Alternately it is possible to switch programs during the interrupt to achieve true multitasking.

HOW IT WORKS

An overview of video concepts is in order to help understand the actual functions provided by VDR.

On the video monitor screen you see a series of luminescent dots and dashes excited by an electron beam scanning the tube from left to right and from top to bottom. If the beam is electronically turned off while scanning, a black dot or dash appears because of a lack of excitement.

The signal that switches the beam on and off is called VIDEO and with the addition of sync signals it is called COMPOSITE VIDEO.

These sync signals tell the scanning (sweep) circuit when to move the beam back to the top of the screen and when to return it to the left side of the screen. These are called the vertical and horizontal sync signals and they occur at 16.7 μ sec and 64 μ sec respectively.

At the top and bottom of the screen are a number of blank lines during which the TS 1000 runs your BASIC and ML programs while in the slow mode.

These lines still require horizontal sync so your program is interrupted by the NonMaskable Interrupt (NMI) every 64 μ sec.

When the bottom of the screen is reached the NMI hands over control to the Vertical sync routine which also scans the keyboard.

After returning to the top of the screen some more of your program runs interrupted by NMI at the end of each blank line until the first line of characters is reached.

Then the control goes to the Video routine which processes each line of characters 8 times while producing the patterns of dots and dashes that make up each displayed character.

At the end of each line horizontal sync is provided by the Maskable Interrupt routine (not NMI) which also keeps track of the number of characters and lines still to be processed.

At the end of the last line of characters your program is reentered and the whole process repeats itself at a 60 Hz rate.

The VDR routine takes the place of the TIMEX video routine and provides the starting location, screen size and number of blank lines to the Maskable Interrupt routine.

It is also possible to update some I/O at beginning or end of VDR or even to switch to different programs at the end of each display giving the appearance of a number of independent programs running simultaneously.

Note that BASIC or ML programs only run during blank lines and that increasing the number of blank line increases the speed of these programs.

Naturally this is offset by the fewer character lines that are on the screen but the transitions in screen size are smooth and cause no flicker.

Many programs require only a modest display and can take advantage of max. 5X increase in computation speed.

Switching can be done "on the fly" and is superior in appearance to the transition from slow to fast in the TIMEX mode.

This is important from one other point of view since the larger 28 line screen provides less blank lines and is therefore slower than the normal slow mode. The right combination of small and large screen, dynamically switched, yields the optimum results.

The ability to set the location of the screen allows a rapid sequence of different screens to give the appearance of animation.

Rapid scrolling is possible by incrementing the screen location by +/- 1,34, etc.

This scheme is ideal for large spreadsheet scanning or word processing.

SOFTWARE DETAILS

To understand the routine in listing 1 let me review the standard ZX video as summarized in listing 3.

Assuming the slow mode and that DFILE, and the screen parameters were previously initialized, the video routine is entered when the NMI routine (66) increments reg A", which holds the number of blank lines above and below the screen, and causes A" to overflow.

This is followed by stacking of the interrupted program registers (6F), loading reg HL with (DFILE), and a jump via (IX) to the start of the ZX video routine at 281.

The vector address in IX can be changed to point to a new routine ie VDR.

Because careful synchronization with the video horizontal scan is required, some of the instructions in these routines are used to achieve precise delays but without any other purpose, which may have caused some headscratching over meaningless disassembled instructions.

At 281 for example LD A,R followed by LD A,F5 is not very useful, you will agree, except for the additional execution time (delay) needed to start the first video line in top lefthand corner of the display.

After loading the BC registers, the R and A registers (2B5), the maskable interrupt is enabled and DFILE is literally executed with a JP (HL).

Keep in mind that bit 7 of the H reg was SET so that an echo of DFILE is addressed and that with ML execution above 32K the SCL chip forces NOPS (00) on the data bus so that the Z80 chip simply fetches each character from DFILE updating the program counter (PC) but is fooled into executing NOPS instead of the opcode the characters would normally represent.

When bit 6 of the character code is a 1 then the SCL chip is disabled from forcing NOPS and instead the true opcode of the character is executed.

This is a HALT (N/L) instruction in the DFILE and may occur at 1 to 33 byte intervals for collapsed or full size displays. In ZX as well as the VDR routines a horizontal scan line is terminated with a maskable interrupt which occurs when address line 6 goes low during refresh time, as determined by bit 6 of the R register.

Since reg R is loaded with reg A during the Interrupt routine (41) this value, previously loaded at 2B7, determines the horizontal line length as the R reg is automatically incremented for each opcode (character) fetch.

Using the interrupt routine, 35 characters are possible without a N/L character or less if N/L is present to terminate the line execution.

Part II next issue.

by F. Nachbaur

This is the first in a series of "custom character set" listings for your Timex/Sinclair machine.

Want to make your screen output really STAND OUT? Try this BOLD 32-column (8x8 bit matrix) set.

The accompanying listing is for the TS1000/ZX81 with static RAM and SHR-Extended BASIC. The UDG definitions are in a sub-routine starting at line 9000. The last three digits of each line number give the character code defined. You may, of course, concatenate the definitions to save memory, but "1-liners" are easy to read.

In this article, the print rows are 9 bits (lines) apart, giving better readability. SHR-EB makes this easy, via its PRINT AT command. However, the normal 8-line increment is entirely acceptable in most applications.

"Normal" video is capitals, reverse video is re-defined as lower case. Feel free to reverse it if you wish. Inverse numbers are "superscripts," handy for doing exponents and such. Inverse symbols parallel 'standard' Memotxt and ZX-TERM*80 conventions.

Change the patterns "to taste."

TS2068 AND SPECTRUM:

Users of other computers, don't feel left out. This pattern set can be used on your machine too, but you'll have to either change the hex strings to binary to use with the UDG BIN commands, or to decimal to POKE them directly to the UDG pattern area.

NEXT TIME...

Next issue I'll try to work up a GOTHIC character set. Meanwhile, have fun !!!

PS ~ A "Dungeon of Ymir" dungeon construction set is available on the NNN. Check it out! NOTE: I'm no longer able to "plug" the oil ZX on the NNN. It's up to Y'ALL to keep the fire burning.



```
"#*?:<>)<+~*;/,•
0 1 2 3 4 5 6 7 8 9
ABCDEFGHIJKLMN0PQRSTUUVWXYZ
!X&'{}~_[]\^'†♦
0 1 2 3 4 5 6 7 8 9
abcdefghijklmnopqrstuvwxyz

"The quick brown foxes jumped
over the lazy dog."
'THE QUICK BROWN FOXES JUMPED
OVER THE LAZY DOG.'
E=m*c² 2†16=65536 2H 0 ‹2H ‹ 0
V ~ [ SIN(t) * EXP(-K/t) + U ]
```

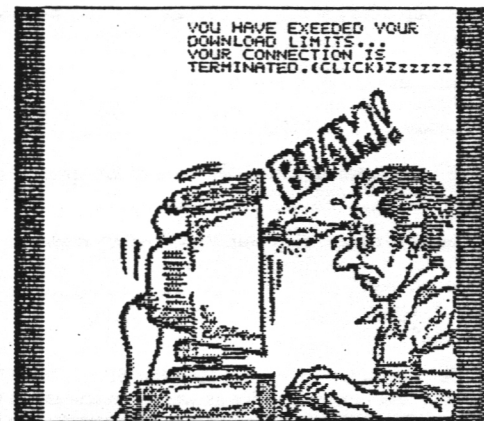
```
10 REM BOLD AS BRAZX
11 REM FOR SHR-EB US
14 REM
15 LET HR=20000
16 REM
17 REM (FOR U2 OF SHR-EB)
LET HR=19400
20 CLS
21 SLOW
22 PRINT "PRESS H TO VIEW HI-R
ES," "PRESS L TO VIEW "NORMAL"
" ""ENTER"" TO STOP "
30 IF USR HR THEN CLS
100 GOSUB 9000
102 FAST
105 CLS
107 POKE 16416,0
110 IF USR HR THEN PRINT )))
115 PRINT
120 PRINT " ";CHR$ 11;"#*?:<>)<
+~*;/,•"
125 PRINT
130 PRINT "0 1 2 3 4 5 6 7 8 9"
135 PRINT
140 PRINT "ABCDEFGHIJKLMN0PQRST
UUUVWXYZ"
150 PRINT
160 PRINT "!X&'{}~_[]\^'†♦"
165 PRINT
170 PRINT "0 1 2 3 4 5 6 7 8 9"
175 PRINT
180 PRINT "ABCDEFGHIJKLMN0PQRST
UUUVWXYZ"
183 PRINT "abcdefghijklmnopqrstuvwxyz"
185 PRINT
190 PRINT "'THE QUICK BROWN FOX
ES JUMPED," "OVER THE LAZY DOG."
CHR$ 11
195 PRINT
200 PRINT "'THE QUICK BROWN FOX
ES JUMPED," "OVER THE LAZY DOG."
205 PRINT
210 PRINT "E=m*c² 2†16=65536 2
H 0 ‹2H ‹ 0"
220 PRINT "
V ~ [ SIN(t) * EXP(-
K/t) + U ] ;TAB 26;"0"
230 PRINT "U S S SIN(t) * EXP(-
K/t) + U S ;TAB 26;"0"
250 IF USR HR THEN LIST
250 SLOW
270 IF INKEY$="H" THEN IF USR H
R THEN RUN
280 IF INKEY$="L" THEN IF USR H
R THEN RETURN
290 IF INKEY$<>CHR$ 116 THEN GO
TO 270
295 IF USR HR THEN RETURN
300 STOP
```

8999 REM BANS-SERIF-30.0
9000 IF USR HR THEN LPRINT UDG;"
"00,00,00,00,00,00,00,00"
9010 IF USR HR THEN LPRINT UDG;"
"6C,6C,48,24,00,00,00,00"
36,12,24,00,00,00,00"
9012 IF USR HR THEN LPRINT UDG;"
"6C,6C,FE,6C,6C,FE,6C,6C,00"
9013 IF USR HR THEN LPRINT UDG;"
"10,7C,D0,7C,16,7C,10,00"
9014 IF USR HR THEN LPRINT UDG;"
"00,00,18,18,00,18,18,00"
9015 IF USR HR THEN LPRINT UDG;"
"7C,CE,CC,18,18,00,18,00"
9016 IF USR HR THEN LPRINT UDG;"
"0C,18,30,30,30,18,0C,00"
9017 IF USR HR THEN LPRINT UDG;"
"30,18,0C,0C,0C,18,30,00"
9018 IF USR HR THEN LPRINT UDG;"
"60,30,18,0C,18,30,60,00"
9019 IF USR HR THEN LPRINT UDG;"
"0C,18,30,60,30,18,0C,00"
9020 IF USR HR THEN LPRINT UDG;"
"00,7C,7C,00,7C,7C,00,00"
9021 IF USR HR THEN LPRINT UDG;"
"00,18,18,7E,7E,18,18,00"
9022 IF USR HR THEN LPRINT UDG;"
"00,00,00,7C,7C,00,00,00"
9023 IF USR HR THEN LPRINT UDG;"
"00,6C,38,FE,38,6C,00,00"
9024 IF USR HR THEN LPRINT UDG;"
"02,06,0C,18,30,60,00,00"
9025 IF USR HR THEN LPRINT UDG;"
"00,18,18,00,18,18,08,10"
9026 IF USR HR THEN LPRINT UDG;"
"00,00,00,00,18,18,08,10"
9027 IF USR HR THEN LPRINT UDG;"
"00,00,00,10,38,38,10,00"
9028 IF USR HR THEN LPRINT UDG;"
"7C,C6,CE,D6,E6,C6,7C,00"
9029 IF USR HR THEN LPRINT UDG;"
"18,38,78,18,18,18,7E,00"
9030 IF USR HR THEN LPRINT UDG;"
"7C,C6,05,0C,38,60,FE,00"
9031 IF USR HR THEN LPRINT UDG;"
"7C,C6,05,1C,06,C6,7C,00"
9032 IF USR HR THEN LPRINT UDG;"
"0C,1C,3C,6C,FE,0C,0C,00"
9033 IF USR HR THEN LPRINT UDG;"
"FE,C0,FC,06,06,C6,7C,00"
9034 IF USR HR THEN LPRINT UDG;"
"1C,30,60,7C,C6,C6,7C,00"
9035 IF USR HR THEN LPRINT UDG;"
"FE,06,0C,18,30,30,30,00"
9036 IF USR HR THEN LPRINT UDG;"
"7C,C6,C6,7C,C6,C6,7C,00"
9037 IF USR HR THEN LPRINT UDG;"
"7C,C6,C6,7C,0C,18,70,00"
9038 IF USR HR THEN LPRINT UDG;"
"38,6C,C6,FE,C6,C6,00"
9039 IF USR HR THEN LPRINT UDG;"
"FC,C6,C6,FC,C6,C6,FC,00"
9040 IF USR HR THEN LPRINT UDG;"
"3C,66,C0,C0,C0,66,3C,00"
9041 IF USR HR THEN LPRINT UDG;"
"F8,CC,C6,C6,C6,CC,F8,00"
9042 IF USR HR THEN LPRINT UDG;"
"FE,C0,C0,F8,C0,C0,FE,00"
9043 IF USR HR THEN LPRINT UDG;"
"FE,C0,C0,FC,C0,C0,00"
9044 IF USR HR THEN LPRINT UDG;"
"3C,66,C0,CE,C6,66,3C,00"
9045 IF USR HR THEN LPRINT UDG;"
"C6,C6,C6,FE,C6,C6,C6,00"
9046 IF USR HR THEN LPRINT UDG;"
"3C,18,18,18,18,18,3C,00"
9047 IF USR HR THEN LPRINT UDG;"
"3E,0C,0C,0C,8C,CC,78,00"
9048 IF USR HR THEN LPRINT UDG;"
"C6,CC,D8,F0,D8,CC,C6,00"
9049 IF USR HR THEN LPRINT UDG;"
"C0,C0,C0,C0,C0,FE,00"
9050 IF USR HR THEN LPRINT UDG;"
"82,C6,FE,D6,C6,C6,C6,00"

9051 IF USR HR THEN LPRINT UDG;"
N","86,C6,E6,F6,DE,CE,C6,00"
9052 IF USR HR THEN LPRINT UDG;"
O","38,6C,C6,C6,C6,6C,38,00"
9053 IF USR HR THEN LPRINT UDG;"
P","FC,C6,C6,FC,C6,C6,00"
9054 IF USR HR THEN LPRINT UDG;"
Q","38,6C,C6,C6,D6,6C,3E,00"
9055 IF USR HR THEN LPRINT UDG;"
R","FC,C6,C6,FC,D8,CC,C6,00"
9056 IF USR HR THEN LPRINT UDG;"
S","7C,C6,C0,7C,06,C6,7C,00"
9057 IF USR HR THEN LPRINT UDG;"
T","FE,18,18,18,18,18,00"
9058 IF USR HR THEN LPRINT UDG;"
U","C6,C6,C6,C6,C6,6E,3A,00"
9059 IF USR HR THEN LPRINT UDG;"
V","C6,C6,C6,C6,6C,38,10,00"
9060 IF USR HR THEN LPRINT UDG;"
W","C6,C6,C6,D6,D6,FE,44,00"
9061 IF USR HR THEN LPRINT UDG;"
X","42,66,3C,18,3C,66,42,00"
9062 IF USR HR THEN LPRINT UDG;"
Y","42,42,66,3C,18,18,18,00"
9063 IF USR HR THEN LPRINT UDG;"
Z","FE,06,0C,38,60,C0,FE,00"
9139 IF USR HR THEN LPRINT UDG;"
"18,18,18,00,18,18,18,00"
9140 IF USR HR THEN LPRINT UDG;"
"E6,AC,F8,38,3E,6A,CE,00"
9141 IF USR HR THEN LPRINT UDG;"
"38,6C,38,7A,CC,CE,7A,00"
9142 IF USR HR THEN LPRINT UDG;"
"18,18,10,08,00,00,00,00"
9143 IF USR HR THEN LPRINT UDG;"
"10,38,38,38,10,00,10,10"
9144 IF USR HR THEN LPRINT UDG;"
"1C,30,18,70,18,30,1C,00"
9145 IF USR HR THEN LPRINT UDG;"
"70,18,30,1C,30,18,70,00"
9146 IF USR HR THEN LPRINT UDG;"
"00,00,71,D8,8E,00,00,00"
9147 IF USR HR THEN LPRINT UDG;"
"00,00,00,00,00,00,FE,FE"
9148 IF USR HR THEN LPRINT UDG;"
"1E,18,18,18,18,18,1E,00"
9149 IF USR HR THEN LPRINT UDG;"
"78,CC,DC,DC,DR,C6,7C,00"
9150 IF USR HR THEN LPRINT UDG;"
"78,18,18,18,18,18,78,00"
9151 IF USR HR THEN LPRINT UDG;"
"18,30,60,FE,60,30,18,00"
9152 IF USR HR THEN LPRINT UDG;"
"80,C0,60,30,18,0C,06,00"
9153 IF USR HR THEN LPRINT UDG;"
"10,38,7C,D6,10,10,10,00"
9154 IF USR HR THEN LPRINT UDG;"
"18,18,08,10,00,00,00,00"
9155 IF USR HR THEN LPRINT UDG;"
"10,38,6C,C6,6C,38,10,00"
9156 IF USR HR THEN LPRINT UDG;"
"1C,2C,24,34,38,00,00,00"
9157 IF USR HR THEN LPRINT UDG;"
"08,18,08,08,1C,00,00,00"
9158 IF USR HR THEN LPRINT UDG;"
"3C,24,08,10,3C,00,00,00"
9159 IF USR HR THEN LPRINT UDG;"
"3C,0C,18,0C,3C,00,00,00"
9160 IF USR HR THEN LPRINT UDG;"
"20,28,3C,08,08,00,00,00"
9161 IF USR HR THEN LPRINT UDG;"
"3C,20,38,0C,38,00,00,00"
9162 IF USR HR THEN LPRINT UDG;"
"1C,20,3C,36,1C,00,00,00"
9163 IF USR HR THEN LPRINT UDG;"
"3C,0C,18,10,10,00,00,00"
9164 IF USR HR THEN LPRINT UDG;"
"1C,36,1C,36,1C,00,00,00"
9165 IF USR HR THEN LPRINT UDG;"
"1C,36,1E,06,1C,00,00,00"
9166 IF USR HR THEN LPRINT UDG;"
"00,00,7A,CE,CE,CE,7A,00"
9167 IF USR HR THEN LPRINT UDG;"
"C0,C0,FC,C6,C6,C6,FC,00"

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9166 IF USR HR THEN LPRINT UDG;"
9167 "00,00,7C,C6,C0,C6,7C,00"
9168 IF USR HR THEN LPRINT UDG;"
9169 "06,06,7E,C6,C6,C6,7E,00"
9170 IF USR HR THEN LPRINT UDG;"
9171 "00,00,7C,CE,F8,E2,7C,00"
9172 IF USR HR THEN LPRINT UDG;"
9173 "1C,36,30,7C,30,30,30,00"
9174 IF USR HR THEN LPRINT UDG;"
9175 "00,00,7E,C6,C6,7E,06,7C"
9176 IF USR HR THEN LPRINT UDG;"
9177 "C0,C0,C0,FC,CE,C6,C6,00"
9178 IF USR HR THEN LPRINT UDG;"
9179 "18,18,00,18,18,18,18,00"
9180 IF USR HR THEN LPRINT UDG;"
9181 "0C,0C,00,0C,0C,0C,6C,38"
9182 IF USR HR THEN LPRINT UDG;"
9183 "C0,CC,D8,F0,F8,CC,C6,00"
9184 IF USR HR THEN LPRINT UDG;"
9185 "38,18,18,18,18,18,3C,00"
9186 IF USR HR THEN LPRINT UDG;"
9187 "00,00,EC,FE,D5,D6,C6,00"
9188 IF USR HR THEN LPRINT UDG;"
9189 "00,00,DC,FE,E6,C6,C6,00"
9190 IF USR HR THEN LPRINT UDG;"
9191 "00,00,7C,C6,C6,C6,7C,00"
9192 IF USR HR THEN LPRINT UDG;"
9193 "00,00,FC,C6,C6,FC,C0,C0"
9194 IF USR HR THEN LPRINT UDG;"
9195 "00,00,7E,C6,C6,7E,06,06,06"
9196 IF USR HR THEN LPRINT UDG;"
9197 "00,00,DC,F6,E0,C0,C0,00"
9198 IF USR HR THEN LPRINT UDG;"
9199 "00,00,7C,E0,7C,E0,7C,00"
9200 IF USR HR THEN LPRINT UDG;"
9201 "30,30,FE,30,30,36,1C,00"
9202 IF USR HR THEN LPRINT UDG;"
9203 "00,00,C6,C6,CE,FE,76,00"
9990 RETURN
    
```



 Reprinted from the Jul/Aug 86 issue of QZX, the
 Journal Covering Amateur Radio & Sinclair Computers

One does not have to use a TV set with the Sinclair computers. The TV modulator can be bypassed and the signal sent directly to a monitor. Connections have been given in past QZX issues, but in response to a question from a reader the following instructions were put together for the T/S 1500. At least for our main circuit board, the procedure is very simple.

First open the case. This is done by turning the computer over and removing five screws from the base. Some of the screws are under the little rubber feet, so these have to be removed first. A little glue may be necessary to keep the feet on after this operation. The screws are all the same length so you do not have to keep special track of which one came from where as you do on the ZX81.

Next turn the computer right side up and carefully remove the top. You cannot separate it completely from the bottom because the keyboard is attached to the circuit board by two cables. There is no need to detach these cables. Just move the keyboard as far toward you as possible without straining the cable connections. The object is to uncover the area around the TV modulator, which is the large metal box in the upper left hand corner.

All that is necessary is to attach a small coax cable to the circuit board. A convenient cable to use is a short piece of RG 174. Any other good quality shielded cable will work.

The coax shield should be connected to one end of R 16, a 220 ohm resistor near the modulator box. The shield should be connected to the side of the resistor near the keyboard, away from the earphone jack.

The center conductor should be connected to the left end of R 30, a 1500 ohm resistor. This end is near the TV modulator box, away from the big IC in the nearby socket.

Feed the cable out of the computer case through the earphone jack hole, attach the appropriate connector on the free end to suit your monitor, and that is it.

This conversion was done on a Timex circuit board number 338-850000-01 A but will work with others too.

Not much work and will probably increase your resolution.



VSUG

The Vancouver Sinclair Users Group has been in existence since 1982. We are a support group for the owners and users of all SINCLAIR and TIMEX computers.

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